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Computerization In The Central Bank Of Nigeria: The Challenge And Response

by

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I. Introduction

The Computer Services Department was established in the Bank in the late seventies as an office in the Organization & Method (O&M) Division of the then Financial Systems & Control Department. Core members of staff were drawn from the existing personnel within the Bank on the basis of aptitude tests. The Computer Systems Office later metamorphosed into Computer Systems Division under the same department in 1980 and was headed by an expatriate contract officer.

In 1986, the Computer Systems Division became the Computer Services Department with the following key objectives:

- Operation and control of the existing computer systems;
- Design, development and implementation of new computer systems to satisfy the Bank's business needs;
- Advising management on the use of computer technology, and Information Technology (IT) training; and
- Achievement of the above objectives in a cost-effective manner.

The year 1989 marked the watershed in the history of the department. In that year and subsequently, the top management of the department changed hands and seasoned computer professionals were recruited from outside the Bank to run the affairs of the department. Significant changes have also taken place in the business requirements of the Bank. These changes have created challenges and opportunities which will be addressed by this presentation.

II. MAJOR CHALLENGES FACING THE BANK IN ITS COMPUTERIZATION EFFORT

The main objective of computerization in CBN is to provide Management with current information in a timely, secure and cost effective manner. The major challenges facing the Bank in meeting this very basic objective include:

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(i) Need to React Quickly to Policy Decisions of the Government

Government policy decisions are dynamic and there is need to always respond to them quickly. Such policy decisions include introduction of SFEM (Second-Tier Foreign Exchange Market), AFEM (Autonomous Foreign Exchange Market) and OMO (Open Market Operation). There have been occasions where we learnt about some government decisions at short notices. A good case in point was the decision of the Federal Military Government in 1989 to transfer the accounts of all government agencies and parastatals to the CBN immediately. We knew about this decision when it was announced and had to take quick actions on providing the necessary additional computer hardware and software. This was made more difficult because the system we had then was obsolete (hardware and software) and was insufficient to meet our own internal needs. Given the dynamic nature of the economy and the constant need to fine tune policy assumptions, the Bank must be prepared to react to such situations at all times.

(ii) Assault on CBN by Fraudsters

We have noticed increased attempt at defrauding the Bank through falsification of documents, impersonation and forgery. These efforts have now extended to the computer area. The Bank, being aware of her responsibilities, has taken and continues to take appropriate preventive measures to thwart attempts to defraud. What is most disturbing is that the efforts seem to be organized and coordinated.

(iii) Lack of Bank-wide Strategic Information Planning Prior to 1989

Prior to this period, there was no bank-wide Information Systems Strategy Plan. As a result, computer systems were being developed on an ad-hoc basis to solve tactical business problems. This problem had since been corrected.

(iv) Shortage of Experienced Technical Staff

The Bank currently does not have enough experienced technical staff because our current salary/benefit structure is no longer competitive enough to attract highly experienced technical staff. In spite of this, a small but highly effective professional management group has been put in place, and we are scouting for more.

(v) Low Level of Computerization Before 1989

Computerization commenced in the Bank in 1976. Between 1976 and 1988, (in 12 years), only four systems (Consolidated Accounting System, Government Securities System, Payroll and Exchange Control System) were implemented in the Bank. All of them had become obsolete by 1989 and there were no concrete plans made to replace them. This, therefore, created a backlog of systems to be developed.

(vi) Lack of Quality Assurance in Systems Development

In the early years of computerization, systems were being developed without following uniform standards. As a result, it cost more and took more time to maintain production systems. This problem has now been eliminated. All new systems being implemented must pass the Quality Assurance tests. A Quality Assurance Office has now been established.

(vii) Erratic Power Supply

Erratic power supply by NEPA continues to adversely affect the electronic components of our computer equipment in spite of large sums of money being spent on generator and Uninterrupted Power Supply (UPS).

(viii) Lack of an Effective Telecommunications Infrastructure

The lack of an effective telecommunications infrastructure for data, telex and fax in the country makes it difficult to send or receive information within the CBN as well as other banks.

(ix) Delay in the Implementation of Information Systems Strategy (ISS)

Even though the ISS study was completed in 1991, the implementation, which was temporarily suspended, has just resumed. This has created a backlog in system development activities and the provision of adequate IT infrastructure for the Bank.

III. RESPONSE TO THE CHALLENGES

The Bank has responded to these challenges in two ways:

(a) Tactical Response

This has been achieved through the development of systems, policies and procedures to meet the short term business needs of the Bank, particularly the implementation of computerized systems as listed below. This is an on-going exercise. Care is also being taken to integrate the short term solution with the long term systems strategic needs of the Bank. For example, all systems' development is done using ORACLE Relational Database Management System running under UNIX Operation System. Both ORACLE and UNIX are "Open" since they allow communications with all the major computer hardware platforms. As a result, the CBN now has the base upon which to communicate with the computer systems of other banks. It also ensures that what is being purchased/developed will not be thrown away owing to non-standardization and incompatibility.

The computerization of the banking and accounting operations of the Bank started with the implementation of the Consolidated Accounting System (CAS) in 1984. The system which was implemented on PDP-11 computers, was batch-oriented. The CAS system soon became inadequate to meet the Bank's current and future business needs. The PDP 11/70 and the VAX 11/750 computers became obsolete and could not cope with the Bank's operational demands. Equipment break-downs were frequent and customers' statements were generated late.

In order to minimize the seriousness of the CAS problem, the Computer Services Department (CSD) in 1989 sought and received Management's approval to replace the obsolete CAS system with a modern online integrated accounting system capable of meeting the business needs of the CBN.

The underlisted systems have been implemented, or are currently under development by the department:

(i) Banking/Accounting System

The objective of the CAS replacement exercise is to automate bankwide the application of all accounting transactions emanating from the conduct of the Bank's operations, with a view to providing timely and accurate information on the status of customer and general ledger accounts at any point in time.

To date, a modern banking/accounting system has been implemented in the following CBN sites:

Site	Implementation Date
Abuja	April, 1991
Ibadan	October, 1992
Maiduguri	October, 1992
Lagos	November, 1992
Uyo	March, 1993
Katsina	March, 1993

Plans for implementation at nine (9) additional locations (Bauchi, Benin, Jos, Ilorin, Enugu, Port Harcourt, Kano, Kaduna, and Sokoto) is in progress. User training, (formal and on-the-job) has been conducted, while user refresher training is on-going. Most of the key enhancements identified by the users have also been implemented on the system. With this implementation, the data processing capability of the Bank has improved considerably when compared with the situation in 1989. There is however, still a long way to go.

(ii) Magnetic Ink Character Recognition (MICR) Document Processing System

In 1983, the Central Bank of Nigeria commissioned a firm of Consultants to study the feasibility of introducing an automated cheque processing system into the Nigerian banking industry. The Bank (CBN) referred the report of this study to the Bankers' Committee which adopted it.

MICR was conceived to achieve the following objectives:

- Automatic sorting and listing of cheques;
- Timely production of management reports;

- Reduction of the incidence of fraud;
- Reduction of clearing days provided improved communications infrastructure is in place; and
- Alignment of banking in Nigeria with international banking practices.

Between 1983 and 1987 there was no activity on the MICR project. However, in 1987, the project was reactivated in CBN. The MICR equipment was purchased in December, 1987. Test run and public enlightenment was conducted in 1987 for the banking community and the equipment was installed in 1988. In 1990, the Central Bank implemented MICR in its Head Office with In-Clearing cheques and House cheques deposited by its customers. Introduction of MICR to locations outside Lagos by CBN and commercial banks is in progress.

(iii) Government Securities System (GSS)

The old computerized GSS system was developed on the PDP 11/70 computer by Compunetics Nigeria Limited in 1985. The system went "live" in 1986. The old GSS and the obsolete PDP 11/70 have become inadequate to meet the Bank's current and future business needs.

A new GSS system was conceived to achieve the following objectives:

- Provide effective information processing facilities for the subscription, transfer and retirement of government securities such as the treasury bills, treasury certificates and development stocks;
- Ensure timely payment of interest to all holders of unredeemed development stocks;
- Facilitate the maintenance and administration of statutory deposits from all licensed insurance and bureau-de-change companies;
- Automate the rediscounting and transfer of security holdings for Discount Office mandates, Cash Drawing Facilities, Interbank settlements and Open Market Operations.

The new GSS system was designed and implemented on a personal computer network solely by the department. The system is user-friendly, online, and menu driven. It went "live" on the 1st of March, 1994. It is operational in the Internal Funds, Public Debts, and Discount Offices of the Banking Operations Department. It is being expanded to cater for direct integration with our banking accounting system and interface with NIBSS (Nigerian Inter bank Settlement System).

(iv) Foreign Exchange Market System (FEMS)

In its original form, the Exchange Control System (EXC), developed in the early 80s to provide the information base for the foreign exchange transactions (import and export) of the country, and the PDP 11/70 on which it ran were no longer adequate for the current and future foreign exchange transactions of the Bank. The Department, therefore, developed a modern and personal computer network based Foreign Exchange Market System in conjunction with B-S Computer Services Limited - a local software company. The system is user-friendly, online, and menu driven.

This system is conceived to achieve the following objectives:

- Effectively record and monitor the allocation and utilization of foreign exchange for imports and invisible trade;
- Track non-oil export activities;
- Maintain data on all bunkering activities from the allocation of Nigerian National Petroleum Corporation; and
- Monitor the administration of all domiciliary accounts in the country.

The system is currently being installed largely at the Trade and Exchange Department. It is at the final stages of implementation. The system was expected to go "live" in the second quarter of 1994.

(v) Refinancing System

The present Refinancing System was developed and installed in the Bank by Chase Manhattan of New York in 1988. The system monitors the buying and selling of Nigerian Government Promissory Notes in the International Market. It also tracks notes back to their original creditors' submission (specifically export certificate categories A,B,C,D, and E) and calculates CBN's liabilities.

The current system has been plagued by numerous problems such as slow execution time (sometimes several days), bad and unreadable input tapes from New York and obsolete and outdated WANG VS 85 computer. In view of these problems and the inability of the system to effectively meet the Bank's needs, the department has initiated the process of converting it to a Personal Computer based system.

(vi) CBN/NDIC Banking Analysis System (BAS)

This is a joint project between CBN and NDIC. This system will allow CBN Banking Supervision, Research and Banking Examination Departments and NDIC to quickly and easily access financial data and corporate information of banks. The functional specification has been completed. Development of the software has commenced.

(vii) Credit Risk Management System (CRMS)

The Credit Risk Management System (CRMS) to capture, store, consolidate, and disseminate credit information of ₦100,000 and above on banks' customers to financial institutions has been developed and tested. The installation is in progress.

(viii) Human Resources Management System (HRMS)

The Payroll system which was developed in 1983 to run on PDP 11/70 computer and went 'live' in 1985 has become grossly inadequate in meeting the payroll requirements of the Bank. Besides, the Bank is also planning to computerize the functions of the Personnel Department. It is intended that the requirements of the Payroll, Personnel and indeed Medical Services are integrated into a single software system such as a modern Human Resources Management System (HRMS). It was decided that a modern Human Resources (HR) package be used to implement these requirements. Great care was taken in the selection of an HR package. A taskforce comprising representatives of user departments and CSD evaluated top notch HR packages. The package has been selected and implementation has commenced.

(ix) Debt Conversion Auction System

This system automates the debt conversion auction processes and provides facilities that enables users to view the bidding session real time. The auctioning sub-system is running "live".

(x) Agric. Finance System

The system is to monitor the disbursement of the ₦100,000,000.00 Agricultural Credit Guarantee Scheme Fund. The system will capture, process and store all relevant information on the scheme for the Agricultural Finance Department to effectively administer the scheme. The functional specification has been completed. Presently, the Request for Proposal (RFP) for the development of the system is being reviewed by the users.

(xi) Small & Medium Scale Enterprises System (SME)

The system will manage the draw down of $270,000,000 (US dollars) from the World Bank and disbursement to entrepreneurs through the participating banks. It will also monitor the subsequent debt servicing payments. The business requirement report on the system had been submitted by the SME Task Force and the functional specification is being developed.

(xii) Debt Management System

Management has approved the installation of the Commonwealth Secretariat Debt Recording and Management Software for the computerization of the Debt Management Department's functions. The sytem will assist the Debt Management Department in the efficient storage, retrieval, processing and monitoring of our external debt utilization and servicing; and formulating appropriate policy. It will aid in the compilation of debt inventory.

A schedule of implementation was jointly prepared by Debt Management and Computer Services Departments. The system had been installed.

(xiii) Mint Inspectorate Inventory System (MIIS)

The system is to assist the Mint Inspectorate Office to monitor the production of currency and coins at all stages of storage and delivery of the finished notes and minted coins in line with the directives of the Bank. The functional specification is currently being reviewed.

(xiv) Building and Engineering System (BESD)

The system is to computerise some of the operations of the Building and Engineering Services Department and it is also in progress.

(xv) Revised Structure for Computer Services Department (CSD)

CSD has been restructured and is now able to respond quickly to user needs. Quality Assurance is now in place to provide the framework for standards, procedures and methods with which the Bank manages and controls all Information Technology (IT) projects and developments. A number of standards have been developed and are being implemented.

(xvi) Use of Personal Computers

The provision of personal computers for the approved departments has been vigorously pursued. Presently, there are well over 600 PCs installed within the Bank. This has greatly enhanced the productivity of staff. In addition, we have generally improved computer literacy in the Bank.

(xvii) Regular User Meetings

The usual communication gap between the technical and user departments has been addressed by regularly holding monthly meetings with user departments to resolve outstanding and new requests.

(b) Strategic Response

The seeds for the strategic response to the challenges outlined earlier started to germinate in 1989 when Management accepted the recommendation of CSD to conduct an Information Systems Strategy (ISS) study for the Bank. The study was conducted over a 3-month period by external consultants and CBN staff.

The objectives of the ISS study were to establish the business objectives of the Bank, identify and prioritise the information systems required by the Bank to support its business objectives, recommend a technical architecture to support the development and operation of the information systems, develop a plan which optimises the implementation of the required systems in detail over

the next eighteen (18) months and in outline over the next five (5) years. The overall plan for the implementation of the ISS recommendation was divided into five (5) years. The overall plan for the implementation of the ISS recommendation was divided into five (5) major project areas indicated below, including voice networks (PABX).

(i) Satellite Wide Area Network

This project covers the establishment of a very reliable, secure, private and comprehensive voice/data satellite communications network across all CBN locations throughout the country, including residence of senior management, to facilitate transfer of information (data, voice, telex, and fax) across the network at any time.

(ii) PABX

Private Automated Branch Exchange (PABX) telephone equipment is to provide the voice connections between the Satellite Network and the individual offices and branches.

(iii) Data Network and Computing Infrastructure

This comprises the procurement and installation of the basic computing equipment in all Bank's offices together with the associated system software and basic office automation software.

(iv) MICR Document Processing Equipment

This comprises the procurement and installation of MICR (Magnetic Ink Character Recognition) document processing equipment in the branch offices; and the integration of MICR into the Bank's computer and communications infrastructure.

(v) Application Systems Development

This project comprises the development or purchase of application software systems to meet the specific needs of the Bank. The development of the candidate systems is being achieved by the combined use of packages, bespoke (in-house development) and joint CSD/Vendor system development. The choice of option will be dictated by the urgent need to implement these systems and level of customisation effort required. Implementation of the ISS recommendations which suffered a temporary delay has now been revived. Both CBN staff and Nigerian/Foreign experts are involved in this strategic project in line with Management's directive on transfer of technology to CBN staff. All recommendations by the ISS team included plans to train Nigerians to take over the day-to-day running of the entire systems from expatriate consultants as soon as practicable.

IV. PROPOSED SOLUTION

The proposed solution to the IT needs of the Bank is hinged on the implementation of ISS study recommendations. The step forward for the Bank to effectively fulfil its roles, both nationally and internationally, is to establish effective communications allied to the use of open systems technology for the development of information systems.

Investment on efficient IT is usually substantial. However, the ISS study has provided the Bank with the benefit of a well articulated plan, the implementation of which will ensure the success and cost-effective computerisation of the Bank's operations. The following are some of the practical benefits the Bank would derive from an immediate implementation exercise:

- Improved speed, accuracy, timeliness and reliability of processing and record keeping;
- Handling of increased transaction volumes without loss of control and potential for system expansion;
- Improved quality and quantity of information to assist Management's decision making;
- Improved enquiry facilities on up-to-date information;
- Fewer manual bottlenecks and errors;
- Consequent requirement for less staff to process transactions and information without loss of control;
- Improved communications, linking all the Bank's locations throughout the country and possibility to link other banks and financial institutions;
- An electronic mail system which would largely eliminate the need for telex and fax communications between Bank locations;
- The potential to expand banking services throughout the country, and directly stimulate the economy through the development of efficient branch operations and communication facilities, including faster turn around cheque clearing;
- The potential to exercise greater controls over currency in circulation;
- Increased ability to improve capacity to manage all types of liabilities and increase the confidence of external bodies such as the World Bank; and
- The ability to exercise closer control in the area of banking supervision.

V. CONCLUSION

The expectations of the government and people of this great country on the Central Bank of Nigeria is enormous. As we approach the 21st century, computers and telecommunications have become the most essential tools for efficient and cost-effective banking operations the world over.

The responsibility for ensuring successful computerisation programme falls on members of staff. Top Management must, therefore, ensure that policies on information technology are approved timely,developed and enforced. This is to say that the full commitment and support of top management are essential to encourage users and IT Department to work together in the best interest of the Bank.

We cannot reside in an island of imcompetence; indeed our place is in the forefront of technological innovative banking.

I thank you most sincerely for your kind attention.